

## CLAIMS

1. A method for encoding a video, the method comprising the steps of:  
dividing (120) the video into a group of frames;  
temporally filtering (134) the frames to provide at least first and second temporal decomposition levels;  
determining (132, 200) at least two motion vectors from the first decomposition level;  
estimating (210) at least one motion vector on the second temporal decomposition level as a refinement of the at least two motion vectors from the first temporal decomposition level; and  
encoding (220) the at least two motion vectors from the first temporal decomposition level.
2. The method according to claim 1, further comprising the step of encoding (230) the estimated at least one motion vector of the second temporal decomposition level.
3. A method for encoding a video, the method comprising the steps of:  
dividing (120) the video into a group of frames;  
temporally filtering (134) the frames to provide at least first and second temporal decomposition levels;  
determining (132, 300) at least one motion vector from the second temporal decomposition level;  
estimating (310) at least two motion vectors on the first temporal decomposition level as a refinement of the at least one motion vector from the second temporal decomposition level; and  
encoding (320) the at least one motion vector from the second temporal decomposition level.
4. The method according to claim 3, further comprising the step of encoding (330) the estimated at least two motion vectors of the first temporal decomposition level.
5. A method for encoding a video, the method comprising the steps of:  
dividing (120) the video into a group of frames;  
temporally filtering (134) the frames to provide at least first and second temporal decomposition levels;

determining (132, 400) at least one motion vector from the first temporal decomposition level and at least one motion vector from the second temporal decomposition level;

estimating (410) at least a second motion vector of the first temporal decomposition level as a refinement of the at least one motion vector from the first temporal decomposition level and the at least one motion vector from the second temporal decomposition level; and

encoding (420) the at least one motion vector from the first temporal decomposition level and the at least one motion vector from the second temporal decomposition level.

6. The method according to claim 5, further comprising the step of encoding (430) the estimated at least second motion vector of the first temporal decomposition level.

7. An apparatus for encoding a video comprising:

means (120) for dividing the video into a group of frames;

means (134) for temporally filtering the frames to provide at least first and second temporal decomposition levels;

means (132, 200) for determining at least two motion vectors from the first temporal decomposition level;

means (210) for estimating at least one motion vector on the second temporal decomposition level as a refinement of the at least two motion vectors from the first temporal decomposition level; and

means (220) for encoding the at least two motion vectors from the first temporal decomposition level.

8. The apparatus according to claim 7, further comprising means (230) for encoding the estimated at least one motion vector of the second temporal decomposition level.

9. A memory medium for encoding a video comprising:

code (120) for dividing the video into a group of frames;

code (134) for temporally filtering the frames to provide at least first and second temporal decomposition levels;

code (132, 200) for determining at least two motion vectors from the first temporal decomposition level;

code (210) for estimating at least one motion vector on the second temporal decomposition level as a refinement of the at least two motion vectors from the first temporal decomposition level; and

code (220) for encoding the at least two motion vectors from the first temporal decomposition level.

10. The memory medium according to claim 9, further comprising code (230) for encoding the estimated at least one motion vector of the second temporal decomposition level.

11. An apparatus for encoding a video comprising:

means (120) for dividing the video into a group of frames;

means (134) for temporally filtering the frames to provide at least first and second temporal decomposition levels;

means (132, 300) for determining at least one motion vector from the second temporal decomposition level;

means (310) for estimating at least two motion vectors on the first temporal decomposition level as a refinement of the at least one motion vector from the second temporal decomposition level; and

means (320) for encoding the at least one motion vector from the second temporal decomposition level.

12. The apparatus according to claim 11, further comprising means (330) for encoding the estimated at least two motion vectors of the first temporal decomposition level.

13. A memory medium for encoding a video comprising:

code (120) for dividing the video into a group of frames;

code (134) for temporally filtering the frames to provide at least first and second temporal decomposition levels;

code (132, 300) for determining at least one motion vector from the second temporal decomposition level;

code (310) for estimating at least two motion vectors on the first temporal decomposition level as a refinement of the at least one motion vector from the second temporal decomposition level; and

code (320) for encoding the at least one motion vector from the second temporal decomposition level.

14. The memory medium according to claim 13, further comprising code (330) for encoding the estimated at least two motion vectors of the first temporal decomposition level.

15. An apparatus for encoding a video comprising:

means (120) for dividing the video into a group of frames;  
temporally filtering (134) the frames to provide at least first and second temporal decomposition levels;

means (132, 400) for determining at least one motion vector from the first temporal decomposition level and at least one motion vector from the second temporal decomposition level;

means (410) for estimating at least a second motion vector of the first temporal decomposition level as a refinement of the at least one motion vector from the first temporal decomposition level and the at least one motion vector from the second temporal decomposition level; and

means (420) for encoding the at least one motion vector from the first temporal decomposition level and the at least one motion vector from the second temporal decomposition level.

16. The apparatus according to claim 15, further comprising means (430) for encoding the estimated at least second motion vector of the first temporal decomposition level.

17. A memory medium for encoding a video comprising:

code (120) for dividing the video into a group of frames;

code (132, 400) for determining at least one motion vector from the first temporal decomposition level and at least one motion vector from the second temporal decomposition level;

code (410) for estimating at least a second motion vector of the first temporal decomposition level as a refinement of the at least one motion vector from the first temporal decomposition level and the at least one motion vector from the second temporal decomposition level; and

code (420) for encoding the at least one motion vector from the first temporal decomposition level and the at least one motion vector from the second temporal decomposition level.

18. The memory medium according to claim 17, further comprising code (430) for encoding the estimated at least second motion vector of the first temporal decomposition level.